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ST. BARTHOLOMEW'S HOSPITAL JOURNAL

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August, 1952

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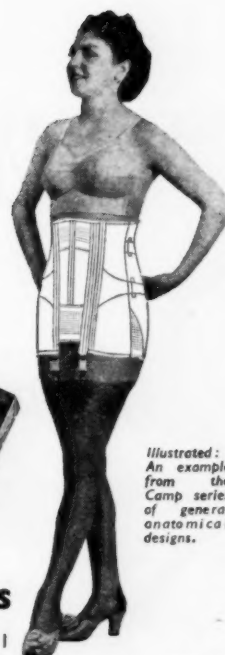
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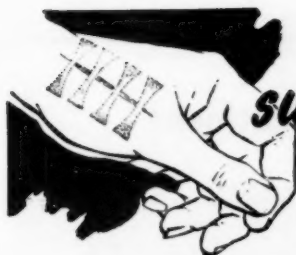
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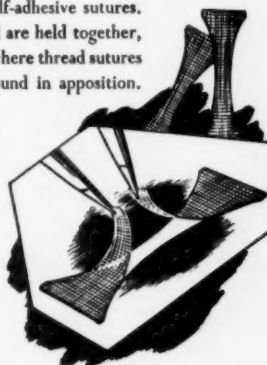
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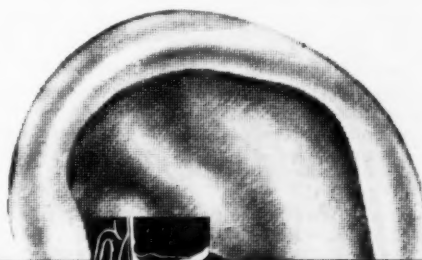
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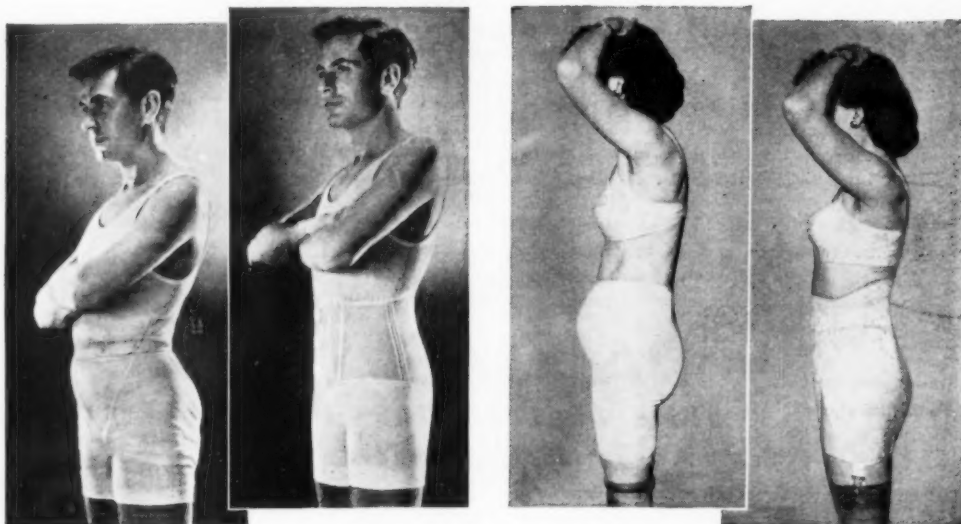
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RELATIVE VALUES

"Two hours' work as a nurse is worth twenty-five years' work as a typist."

(The Archbishop of Canterbury, addressing school-children recently.)

The Rev. Sydney Smith, the least theological and the most witty prelate who ever graced the Church of England, once said: "I have, alas, only one illusion left, and that is the Archbishop of Canterbury." Not so a correspondent of the *News Chronicle* who, indignant at Dr. Fisher, wrote: "Some people might consider two hours' work as a farm labourer on food production worth twenty-five years' preaching." Without resorting to this terse vehemence, we too must take the Archbishop to task for what we conceive to be a sadly unbalanced scale of values.

We must not imagine that Dr. Fisher wishes to be taken literally, but to have meant "nursing is a far more valuable profession than secretarial work." In spiritual or in personal terms this may be true, but the assessment would be very difficult and is not to be attempted here. But the country's economy is a subject on which everyone who reads a morning newspaper knows himself to be an expert and does not hesitate to say so. And in this context Dr. Fisher's dictum just won't hold water.

The Archbishop himself, in the June issue of *Look and Listen*, which appeared a few days after his above-quoted speech, helps to refute his own contention. In a sharp criticism of television in schools, he attacks it as much on economic as on cultural grounds. "Here we are, an almost bankrupt nation, desperately trying to make ends meet. It is the duty of us all in public and private to be abstemious." If we *are* "an almost bankrupt nation"—and "wolf!" has been cried so often and so long that many are beginning to wonder if we really are—then, surely, the importance of the commercial

professions, directly concerned with producing and selling the fruits of our industry abroad, is greatly enhanced, while the expense of a public service, however beneficial it may be, becomes almost a burden to the society that supports it. Shorthand-typists and secretaries are as essential to commerce as nurses and doctors to medicine, and it is good clever efficient salesmanship which will make and keep this country solvent, and not good clever efficient medicine. He would be a fool who underestimated the service of a trained nurse to the individual patient; he would be a bigger fool who thought she added one penny to the country's national income. The respective incomes of nurse and typist provide harsh confirmation of the validity of this reasoning.

But though the Archbishop is in error, he was merely giving voice to the layman's instinctive feeling that those who enter medicine in almost any of its branches are deserving of respect, and acquire virtue and honour almost *ex officio*. The pernicious feature of this myth is that most of us unconsciously agree with it.

What attracts a girl into nursing is a difficult problem to solve. To some the aura of romance about the medical life will be irresistible, to others the fact that nursing is the sole respectable *women's* profession (in which it is men who are the intruders) will be the deciding factor. It is probably true to say that in almost no other profession do so many of its members have a true sense of vocation—and this not necessarily Christian in origin.

But we hasten to exclude doctors from this satisfying assertion. When, on our first firm, some pleasant appreciative patient says to us

for the first time: "Doctor, I do think it wonderful the way you're devoting your life to other people . . ." (or words to that effect), we should blush furiously and deny it strongly. We don't, of course; we thank them for their compliment and feel rather pleased with ourselves. From that time onwards we come more and more to assume that the medical profession is almost the sole repository of human goodness left on earth. Probably this assumption can be regarded as one of the perquisites of the profession. Probably it is necessary for us to believe in our own virtue in order to keep going through long surgeries and difficult early-morning labours. But it is salutary to recall, every now and again, that those large commercial druggists whom we rather despise have contributed more to the country's recovery from the war than the whole of the nursing and medical professions put together.

What makes a boy become a medical student is a question even more difficult to answer than what makes a girl take up nursing. Some of those who follow their fathers into medicine have probably never thought why at all—and certainly won't make the worse doctors for that. Others combine an interest in human beings with an interest in science and find each best satisfied in medicine; others, again, fall for its romance. But

whatever their reasons, not nearly so many have a vocation to medicine as would like, either openly or covertly, to suppose. It is not unreasonable to suspect the motives of one who avers that he had a call to a profession which seems to provide the majority of its members with a good income, interesting work, a position of trust and influence, and much of the mystique of occult knowledge.

In the eyes of the public one cannot have a vocation to shorthand-typing or to carpentry: but you can have a vocation to the Church or to medicine, and no one will think you mad for saying so—in fact, they will be rather shocked if you don't. It is significant, then, that when the Church was wealthy there was no shortage of clergy, whereas now it is poor all denominations are appealing for recruits. Medicine, on the other hand, seems to be surviving the torments of the Health Service fairly comfortably—a fact which has not escaped discerning parents who send their children to medical schools in far greater numbers than can be accepted. Were medicine to be paid at a teacher's salary, and carry the same social status, it would not be so popular.

No. Our virtue is part of our stock-in-trade. It is something which we acquire from the profession, not something we bring to it. Someone ought to tell Dr. Fisher.

Journal Appointments

George Birdwood, who has been Editor for the last six months, has resigned.

Ian Backhouse is the new Editor, and Stephen Lock the new assistant Editor.

Journal Subscriptions

It has been decided that the concession whereby newly-qualified Bart.'s men receive the *Journal* at the cheap rate of 12/6, post free, for one year after qualifying shall be extended to cover a second year. Thereafter, the subscription is one guinea per annum. It is hoped that this will encourage students to continue receiving the *Journal* after they have qualified. Subscription forms are obtainable from the Manager at the Hospital.

Change of Address

Dr. G. L. Colenso-Jones from c/o Iraq Petroleum Company, P.O. Box 150, Tripoli, Lebanon to 92a, Harley Street, W.1.

Scholarships

Junior Scholarships in Anatomy and Physiology:

1st Scholarship: E. R. Nye.

2nd Scholarship: M. A. Bedford.

Prox. access: D. H. Elliott.

Congratulations

To Dr. C. H. Andrewes on being awarded the Stewart Prize this year. The prize is awarded by the B.M.A. for important work done upon epidemic disease. Dr. Andrewes was one of the discoverers of the influenza virus and is in charge of scientific work at the Common Cold Research Unit at Salisbury.

* * *

To Wing Commander A. J. Barwood, R.A.F. Medical branch, on receiving the O.B.E. (Military Division) in the Birthday Honours on June 5.

Dr. Mervyn Gordon

On behalf of all at Bart.'s the *Journal* sends its congratulations and best wishes to Dr. Gordon on reaching the distinguished age of 80 on June 22nd.

Dr. Gordon entered Bart.'s in December 1895 and qualified three years later. Ever since then his work has been centred here in the Pathology Dept., and since 1923 he has been Consulting Bacteriologist to the Hospital. There are few branches of bacteriology to which he has not made major contributions, his work being particularly notable in air hygiene, virus research into variola and vaccinia, cerebro-spinal meningitis, Hodgkin's disease and cancer.

He kept himself in the background, but his many interests, warm personality, and refreshing lack of conventionality brought him many friends. His lively sense of humour is shown by the following story.

Dr. Gordon had a monkey of which, by way of reward for surviving many experiments, he had made a pet. He kept it on the fourth floor in the Pathology block and was in the habit of taking it fruit from the Refectory after lunch. One day he was returning from lunch and found Sir Holburt Waring—himself now a respectable nonagenarian—stuck in the lift between two floors. Sir Holburt was very annoyed, as was readily to be seen. His ruffled feelings were not improved by Dr. Gordon, who came and fed him with a peeled banana through the bars of the lift!

Occupational Hazards.

The ordinary occupational hazards of Editors are those normally to be expected by those who have to please everybody, offend no one, and simultaneously provoke interest and argument. A silver tongue is as important to us as a typewriter and a pot of paste. But we have recently heard of a special hazard which we are at pains to avoid.

A predecessor of ours, his brief case full of files and papers, one day stuffed into it the "paste-up" copy of the next month's *Journal*. During that morning he received a letter from his current girl-friend, couched in most intimate terms, and this also he stuffed into his brief-case when he had read it. But, unfortunately, it fell within the pages of the paste-up.

This, which already contained two new letters to be set up, duly went back to the



"I think I've got the right guinea-pig by the ear this time."

(A "Candid Camera" snap. Dr. Gordon has the pig; with him is Mr. Fenton Braithwaite.)

compositors, *three* letters were somehow or other fitted in and the final draft sent direct to the printer. He, glancing idly through it, came by sheer chance upon a problem early in the *Journal*, long before the correspondence columns were reached. He phoned the Editor who went to see him, soon straightened out the difficulty, and then he, in turn, skimmed through the rest. Imagine his surprise to see that one of his correspondents addressed him as "Darling" and signed herself "Bubbles."

Albeit reluctantly, he felt compelled to extract it and to write to himself upon some dull subject in substitution. The dignity of the *Journal* was saved, but by how narrow a hair's breadth!



By courtesy of the Daily Graphic

The Bart.'s IV beating First and Third Trinity, Cambridge, in their heat in the Wyfold Cup at Henley

Bart.'s at Henley

The traditional success story in sport is of a club, hitherto unknown, breaking into the limelight by winning a major event against strong opposition. This year was the first occasion, so far as is known, that the Hospital has sent a crew to row at Henley, and all rowing men here hoped that the Senior IV might win the Wyfold Cup first time.

They didn't, but it was not for lack of training or hard work. They rowed together for several weeks on the Tideway and were one of the first to start training at Henley, three weeks before the Regatta. They soon won golden opinions and were a much-fancied IV, *The Times* Correspondent singling them out for praise.

In the eliminating heat they disposed of First and Third Trinity, Cambridge, at a firm paddle, and on the first day of the

Regatta they rowed beautifully to beat Emmanuel, Cambridge, by four lengths in a fast time. The second day, alas, found them off-colour, but they led the R.A.F. (Benson) IV from the start to the Mile-post—where the usual little accident occurred. They lost a length, they lost heart, and they were finally beaten by half a length after a very close race.

That a Bart.'s IV should be at Henley at all is a tribute to those members of the Boat Club who have built up rowing at Bart.'s from nothing to the point where the Hospital has won the major events at the Hospitals Regatta two years running. *The Journal* congratulates the Club and sends its best wishes for Henley next year.

Senior Four : Bow, F. R. Spink (steers) ; 2, G. F. B. Birdwood ; 3, J. F. G. Pigott ; str., D. H. Black.

CARCINOMA OF THE BREAST

A brief historical survey of the treatment*

by GEOFFREY KEYNES

At the present moment I have in my ward a woman, aged 46, with a hard lump in her right breast, having the characters of an early mammary carcinoma. I propose to remove the breast with the diathermy needle, following the operation with a course of deep x-ray therapy to the whole lymphatic area. The situation of this patient shews nothing unusual, but it may be of interest to trace briefly the steps by which, over the years, the treatment, such as I propose, has been arrived at.

Cancer of the breast in its late stages has been recognized for at least 3,000 years, and there have always been quack cancer-curers, working usually with some form of caustic application to produce sloughing of the mass of the growth. For breast surgery we need look no further back than to the middle of the sixteenth century, the time of Ambroise Paré, the great French surgeon, who dominated the surgery of his era. Paré does not, in his published works, describe any specific operation, but his account of the disease shews that he recognized the importance of lymphatic spread: "When cancer possesses the breasts, it often causes inflammation to the arm holes, and sends the swellings even to the glandules thereof." In surveying the methods of treatment he recognized the value of sometimes doing nothing at all. "When it is increased, and covers the noble parts, it admits no cure but by the hand; but in decayed bodies whose strength fail, especially if the cancer be inveterate, we must not attempt the cure, neither by instrument, nor with fire, neither by too acrid medicines, as potential cauteries; but we must only seek to keepe them from growing more violent, and from spreading further, by gentle medicines, and a palliative cure. For thus many troubled with a cancer have attained even to old age."

An idea of the kind of operation practised around the year 1600 may be gained from

the writings of a German surgeon, Fabry of Hilden, or Hildanus (1560-1624). In his *Works*, published in 1646, he insisted that the tumour must be mobile and admitting of radical excision. The operation, he said, was fruitless, if any portion, however minute, were left behind, and he recognized that a growth which "sprouts again" is even more malignant than before. Fabry described two operations. In one, for a small tumour, the skin around it was incised, the tumour was partly separated from its surroundings with the finger nails, and then an instrument called a forceps was applied. The tumour was thus dragged off, and the bleeding vessels were ligatured. In the other, for larger tumours, after the skin had been incised, the mass was separated from the chest wall with a large knife.

The practice of the later 17th and early 18th centuries is represented by Laurence Heister in his *General System of Surgery*, 1743. He removed the smaller tumours through a straight incision, bleeding being stopped by styptic powders, or by a large thick compress dipped in warm ale and butter. Larger tumours he would pierce with enormous needles carrying thick strings; by pulling on these the mass could be elevated away from the chest wall so that it could be cut off cleanly with a long knife. Alternatively the breast might be raised by piercing it with a long two-pronged fork. It seems that the very newest method was to encircle the breast with two semicircular double brass rings hinged together. On the same hinge was a falciform knife which passed like a guillotine between the rings and sliced off the breast.

Samuel Sharp, an English surgeon, was somewhat more advanced. In his *Treatise on the operations of Surgery*, 1735, he described the excision of the breast through an oval incision, the main gland being carefully cleaned away from the pectoral fascia. If it was found to be adherent to the fascia, Sharp judged that the operation was impracticable, and further, if it was associated with "knobs" in the armpit, no service was done unless the "knobs" were taken away. Sharp sounds the

* The substance of Mr. Keynes' last clinical lecture given at St. Bartholomew's Hospital on February 29th, 1952.

first note of modernity when he writes: "The possibility of extirpating these knobs without wounding the great vessels is very much questioned by Surgeons, but I have done it when they have not laid backwards and deep."

In the early 19th century pathology was still primitive in spite of Hunter, so that early diagnosis of cancer was seldom or never made, and local operations were still done in the advanced stages of the disease. These tended to be made less and less extensive as time passed, until in 1867 Charles Moore¹ of the Middlesex Hospital was moved to protest against the influence of the inadequate operation. Moore was fully aware of the value of the "follow-up" principle and had made a study of a series of patients with recurrences after removal of their breast carcinomas. He was ready to allow that tumours of the breast were now removed earlier than formerly, but complained that the technique of the operations was worse than it was one or two centuries earlier. Then a wide removal had been the rule; but now the skin was undermined by dissection and, after removal of the tumour, was laid down again. Sometimes even the nipple and areola were allowed to remain. Moore enunciated two important principles: firstly, that the tumour should not be cut into and should, indeed, not be seen at all during the operation; and secondly his belief that the recurrence of the cancer was determined by centrifugal dispersion from the primary growth and not by any independent organic origin. Moore's advanced views were further reflected in his three main conclusions.

1. That cancer of the breast calls for careful extirpation of the entire organ.
2. That removal of the breast is most likely to be incomplete at the sternal edge.
3. That unsound adjoining tissues, especially the skin, should be removed in continuity with the main mass of the disease.

Lord Lister was practising free removal of the breast at this period, and Sir James Paget was at work at St. Bartholomew's. There was thus advance in surgery while post-operative sepsis receded, and contributions to literature by competent observers multiplied. One of the most interesting of these was Samuel Gross² of Philadelphia, a surgeon eminent in his own right and not to be remembered only as the first husband of Lady Osler. Gross maintained that the rules laid down by Charles Moore in 1867 were to be strictly

observed and even extended. He insisted that in the most favourable circumstances, namely when the tumour was of small size and devoid of superficial and deep attachments, without any enlarged axillary glands, then the proper procedure was to remove the entire breast and its coverings by a circular incision, to dissect away the fascia covering the pectoral muscles and to prolong the incision into the axilla, which should be dissected clear of lymph glands even when it was apparently free of disease. Gross had, indeed, enunciated for the first time the fundamental principle of present practice, and further developments were only modifications of what he had laid down.

Meanwhile Mitchell Banks³ in England was supporting Charles Moore's protest against inadequate operations. Surgeons were persuading patients that they removed their cancers, and almost persuaded themselves, but there was always that little bit left which they fondly hoped would not grow because it was *such* a little bit. They did it better, he said, 150 years earlier. The breast was then seized with great pincers, struck off with an enormous knife, and the cut surface seared with a red-hot poker. Now surgeons removed a little elliptical bit of skin round the nipple and the remaining skin full of cancer germs was carefully laid down again. Banks advocated a much wider excision than was usually practised, though he did not remove the pectoral muscles. He would pinch away the axillary lymph nodes with the nails of his forefinger and thumb (rubber gloves being, of course, unknown in his time). Patients were followed up, but so imperfectly, that Banks was inclined to believe that if a patient remained well for three years she was permanently cured.

A lively discussion took place in 1887 and was reported in the B.M.J.⁴ Banks held that extirpation of the axillary glands was a necessary part of the operation, but other eminent surgeons criticised this position. Sir Thomas Smith expressed the reactionary opinion that "it was a question for consideration whether a local excretion of cancer did not render patients less liable to constitutional disease." All experienced surgeons even at the present day have seen patients, whose survival in good general health in spite of extensive local growth, might, if regarded uncritically, lend support to this view. Smith even asserted that "the patient lived longest who had never been operated on," thus

echoing Paré's dictum from the sixteenth century. Sir Henry Butlin lent the weight of his experience to the conservative view. He said that very free removal in every case was an unsurgical and unscientific proceeding. The operation bore no relation to the extent of the disease. He would not cut open the axilla unless enlarged glands could be felt. When no glands could be felt the disease was less malignant and therefore the results were better.

Butlin's figures were instructive.

<i>axilla not opened</i>	<i>opened</i>
mortality 10%	20%
well in 3 yrs. 18%	5%
in 101 cases.	in 209 cases.

He was thus distinguishing more or less between what is now called Stage I and the later stages, and it will be noticed that only half as many patients were treated in Stage I as in the later unfavourable stages. The operative mortality was high, but Mitchell Banks suggested that, though the statistics were affected by the mortality from sepsis, the vitality of the patients was affected by the cooling from the Listerian carbolic spray, thus accounting for the heavy mortality following the more severe operations.

During the next ten years the main advance in treatment was made in the United States of America. Halsted, working at the Johns Hopkins Hospital, Baltimore, reviewed his patients over a period of ten years, and in 1898 showed that the radical operation for cancer of the breast had by this time been carried to its logical extreme. So much skin was removed that it was often necessary to cut grafts larger than a hand from the patient's thigh to cover the raw area on the chest wall. The pectoral muscles were removed, and not only was the axilla dissected clear of glands, but also the supraclavicular region, part of the clavicle being removed at first to make this easier. On three occasions Halsted's then unknown assistant, Harvey Cushing, cleaned out the anterior mediastinum for recurrent cancer, and thought it likely that in the near future this would be done at some primary operations. Halsted and Cushing found that operating for the cure of cancer of the breast was a very great labour, taking from two to four hours and they never attempted more than one of these operations in a day.

It will be seen that the so-called "Halsted's operation" of the present day is not really following out that master's principles, which

had indeed carried him beyond what is now regarded as justifiable. Infection of supraclavicular glands usually indicates mediastinal infection, which is beyond the reach of surgery, so that any operation is likely to be only palliative.

The value of simultaneous oophorectomy was also being discussed about this time. The general opinion agreed with the view held at the present time, that its effect, though often good, is only temporary.

The next landmark in the history we are tracing is the work of Sampson Handley, whose book on the mammary gland was first published in 1906. Handley's aim was to put operative surgery as applied to the breast on a scientific basis by picturing accurately the microscopic ramifications of a cancerous growth and its modes of dissemination. In effect, Handley was re-stating the principles enunciated forty years earlier by his predecessor at the Middlesex Hospital, Charles Moore, the doctrine of centrifugal permeation being his central theme. It was amplified and fully illustrated histologically, centrifugal growth being shown to be often followed by centrifugal death, cancer cells in the lymphatics being destroyed by tissue reaction between the primary growth and the head of the advancing column. The importance of local spread of the disease by infiltration was not overlooked by Handley, but he laid the emphasis on permeation through the main highway of the lymphatic plexus in the deep fascial layer. He based his operation on this, maintaining that, as the growing edge of a permeating cancer cannot be recognized, its invisible presence must be assumed. On this basis Handley insisted on a wide removal of skin with a still wider removal of deep fascia together with the muscles beneath it. He also insisted, as Moore had done before him, that the tissues removed, including the contents of the axilla, should be dissected away in continuity, so that permeated lymphatics should not be cut across.

Handley's scientific-sounding thesis has had immense influence, and orthodox surgery carries out his principles to the present day. Its publication in book form was undoubtedly followed by a great improvement in the general results of surgical treatment of breast cancer. A rule-of-thumb had been established which eliminated the necessity for further thought, and it was comforting to believe that little further improvement was possible. At the same time it is as well to remember that

surgery is not merely carpentry, and that intellectual processes are not to be neglected.

The first shock to complacency came from a Ministry of Health survey published in 1924 showing that the improved results of surgery were due in large measure to earlier diagnosis of the disease, and not very much to technical improvement in the operation. Handley's thesis has undoubtedly been of great value, but Surgery should never stand still, and a critical examination of surgical dogma is always wholesome. Most of the work described in Handley's book was done nearly fifty years ago, and it probably now has few readers. Its influence might perhaps be lessened if it were read oftener, so that more readers could appreciate the fact that its conclusions are vitiated by a fundamental flaw in the premises. For it will be found that all the pathological material was taken from patients who had died of the disease. In other words, a wholly abnormal state of affairs was taken as the basis for a system of treatment which was to be applied to all stages of the disease, early as well as late. Handley has, it seems to me, laid too much emphasis on the importance of centrifugal permeation of lymphatics, leaving an impression that the spread by this method takes place almost equally in all directions. In fact, spread by embolism along lymphatics and by invasion of venous channels are probably much more important, the second of these being rapid and determining most of the secondary deposits in liver, lungs and long bones. Embolism will almost invariably take place first along the line of least resistance, that is, the large lymphatic channel leading to the axillary lymph nodes, particularly those on the inner wall, and experience shews that these nodes are almost always the first secondary infections to become clinically evident. When this channel is blocked, then other abnormal channels will develop, such as those supposed by Handley to proceed by the fascia of the rectus abdominis and the falciform ligament to the liver. These channels, together with others, such as those supposed to cross the mid-line to the other breast, are not known to anatomists and do not in fact exist except in the abnormal condition described by Handley. There can, however, be no doubt that the position of the primary growth is of great importance in determining the spread. Charles Moore pointed out that extirpation of the disease was always more difficult when it started near the

sternal edge of the breast, this being due, as we now know, to the presence of lymphatic channels piercing the intercostal spaces to terminate in the internal mammary lymph nodes. Richard Sampson Handley has made an important recent contribution by following Harvey Cushing's example, and, by diving into the anterior mediastinum, he has shown that secondary disease in this position is not uncommon; this may be one of the quicker lines of embolic spread when the disease starts in the mesial part of the breast.

The routine performance of the "radical operation" should perhaps be regarded as an over-simplification of the problem, and I have probably made the same mistake by taking the line that the operation is unnecessary in the early, and useless in the later, stages. I have not, indeed, performed it for nearly twenty-five years, and I am sure that my patients have not suffered thereby; but my practice has been profoundly affected by the simultaneous use of irradiation in its different forms. An experiment with the use of radium was initiated by Professor George Gask in this hospital, and he briefed me in 1922 to ascertain what could be done with radium needles in carcinoma of the breast. For some years this treatment was applied only in the inoperable stages of the disease. Later, when the efficacy of radium had been established, its use was extended to the earlier stages. Until 1939 I used conservative surgery in combination with radium as the method of choice, and satisfied myself that the results, as reckoned in survival rates, were as good as could be obtained by "radical" surgery, with the advantage of lessened mutilation and the avoidance of oedema of the arm, which so often follows a rigorous dissection of the axilla. After the war ended I did not return to the use of radium needles because high voltage x-ray therapy had made great advances, with certain advantages over radium needles in not causing fibrosis or neuritis. Unlike some other forms of cancer, breast carcinoma shews greater sensitivity in secondary, than in primary, growths, so that the axilla and neighbouring regions can be effectively treated by this means. McWhirter took the principle much further when he persuaded most of the Edinburgh surgeons to allow their patients to be treated systematically by conservative surgery and deep x-ray therapy. The number of patients on whom observations could be made was greatly increased in this way, and

McWhirter's results, which will soon be showing a ten year survival rate, indicated that the radical operation had no advantage over conservative methods. Orthodoxy has been greatly shocked by this subversive tendency, but history cannot be denied, and time will shew whether conservative or radical surgery is to be preferred. My own view is that the use of radiotherapy with surgery will only be limited by the small number of centres where first-rate technicians and the best high-voltage apparatus is available. Apart from this it seems certain that the main advance in improvement of results from treatment will always depend chiefly on the greater frequency of early diagnosis. Even in 1877 Coley, who advocated following

patients for long periods of time and abolition of the three year standard of "cure," asked, "Have you ever imagined what the results would be if all cancers were thoroughly excised when they were no bigger than peas?" Progress may rest, therefore, more in the hands of the patient and the general practitioner than in those of the technical experts who practise the best surgery.

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SOME OBSERVATIONS ON CANCER OF THE BREAST

by I. G. WILLIAMS

If the evidence presented by the great artists of bygone days is true, the female breast was a more rounded and upright organ than the compressed gland we see today. It is, therefore, quite understandable that the first instruments for removal of a diseased breast were various designs of circular clamps, the operation being truly an amputation. The elliptical incision with the nipple as its centre was devised in order to conserve skin, to cover the large raw wound which remained. In 1866, Philip Chilwell Delagarde, an ex-Bart.'s student on the staff

of the Devon and Exeter Hospital, remarked that "the Surgeon of a great Hospital would hardly render justice to his position if he had not sufficient self-reliance so to alter old operations or devise new ones so as to meet each varying contingency of disease or accident." He found that the disease could not always be included in the ordinary elliptical incisions, and describes two cases "in which I removed the contaminated parts, and yet retained integument enough to cover the wound. (Fig. 1.) I had to forbid the hope of absolute cure, but I told the poor



Fig. 1. Alternative lines of excision suggested by Delagarde in 1866.

creatures that life might be prolonged, and that when the disease did return, it might bring them to their end with far less distress than if allowed to take its course. This seems in course of fulfilment."

He describes three further cases of carcinoma of the breast treated by simple mastectomy. One died from metastases a few months later, and one was alive and well three years later. The third patient: "Mary Sweet (of Cullhampton), a mother aged 43. History: 18 months: knotty hard tumour in breast, the size and shape of an egg.

15.11.1847. Tumour, skin and breast together with lymph glands extending up to the artery removed.

16. 9.1848. A large tubercle removed from the scar.

3.11.1856. Removal of a tumour the size of a small orange from the cicatrix.

May, 1867 (last follow-up note). "She is grown into a little, hardy fresh-looking old woman; there is a small tumour below the clavicle near the sternum."

One of the puzzling features of cancer to these surgeons of the past was the method of dissemination away from the local growth. Charles H. Moore, a Bart.'s student, later on the staff of the Middlesex Hospital, reported on a case in 1867, illustrating extensive cancer traceable to dispersion from the primary tumour, "as distinguished from its constitutional reproduction. Under ordinary circumstances a dissemination of cancer is distinctly recognisable in the vicinity of the primary growth. Beyond this dispersion of cancer an intervening gap appears which is held to dissociate the separate tumours from one another, except so far as they are related to one occult cause, which gives origin equally to both. Thus in the increase of mammary cancer, it is usual to find outlying disease in the skin, axillary glands, the underlying muscle, and to pass these limits and invade the glands of the anterior mediastinum." The old surgeons recognised internal mammary gland invasion as happening in an early stage, linking it with the skin and axilla in the order of progression. Beyond this stage they were in difficulties. "Further disseminations are not equally common or traceable with equal certainty to the primary growth. In special circumstances a connection between distant tumours is obvious from some incidental character which they possess.

Melanosis thus carries everywhere the stain of its origin."

He describes the case of Mary S., aged 43, a dressmaker, slender and pale, "who had a carcinoma of the breast with an oily characteristic recognisable macroscopically. The whole of the left breast is enlarged by a firm, elastic tumour, the skin over it being discoloured and in part ulcerated. There is a cluster of enlarged glands in the axilla and a firm globular gland above the clavicle."

May 30, 1865. The tumour, breast and axillary glands were removed, the wound being washed with zinc chloride. By August the wound was healed with a thick transverse scar.

Her further progress is then recorded with the regular observations of a medical Pepys: October, 1865. Nodules just *below* the scar.

The scar and the armpit *above* are healthy. November, 1865. A great advance has taken place in the disease. In mass, in ulcers, and in nodules, it extends over half the chest, below the scar, down to the 10th and 11th rib, and round towards the scapula. The supra-clavicular fossa is free, but there are two large glands in the opposite axilla. Later the disease spread to the left groin, the opposite chest, and to the left chest and supra-clavicular region last of all.

The patient died, and a post mortem examination was carried out. Remarks: "However inexplicable the diffusion of cancer usually is, in the case of Mary S. it appears to be traceable. Upon the removal of the primary tumour with the axillary glands, and the substitution of a tough transverse scar across the left side of the chest the upward superficial lymphatic currents from parts *below* the scar and axilla are intercepted . . . the recurrent disease *below* the scar, tumid and turgid from venous and absorbent obstruction, yet increased with great rapidity. Its liquid material, diverted from its normal progress through the superficial absorbents, *becomes disseminated in every direction which was open*. It flooded the lower half of the left side of the thorax, and passed by anastomosing lymph tubes to various glands. The precise course . . . appears to have been superficially by the collateral lymphatics into the right axilla and left groin, deeply through the chest wall into the lymphatics of the left costal pleura and upper glands of the anterior and posterior mediastinum . . . whilst its advance through

the upper glands and scar was impeded an accumulation below these obstructions took place. Presently some of the bronchial glands received the disease which also regurgitated on the lumbar glands. . . . Upon destruction of the scar the abundant material from the primary growth rapidly passed in a normal current through the upper flap and filled the

here and there until ultimately a gap is found, when off they go. Similarly the carcinoma cell drifting in the silent streams in the tissue spaces is impeded by scar tissue, until ultimately a gap is found. It is carried to a remote and bizarre site where it settles down and reproduces itself. If a growth is not totally removed and cells remain in the



Fig. 2 Carcinoma of the Breast. Recent case, showing skin infiltrations stopped by scar tissues and beginning in a few places to extend across it

glands at the left side of the neck. As lastly the diaphragm becomes covered with it, the white matter passed into the suspensory ligament of the liver, and into the liver itself near the ligament."

Experience of post-operative cases confirms the observation on the effect of a scar on the spread of carcinoma of the breast. (Fig. 2.) It raises the question of the effect of surgery, especially radical mastectomy and axillary dissection, on the bizarre spread of carcinoma of the breast. Lymph node metastases in the groin or opposite axilla, skin infiltration below the scar spreading posteriorly and laterally around the chest wall, are not uncommonly seen. The similarity of cancer to a crab is greater than that of a central body with outgrowths. If one watches small sand crabs darting hither and thither, their passage is seen to be blocked

operative field, that patient's only chance is to have a dense wall of scar tissue to impede its travels. Radiotherapy may not destroy every malignant cell, but it may produce fibrosis sufficient to limit the spread of the growth. Thus as far as the patient is concerned, simple removal with radiotherapy may be safer than radical removal if a gap is left in the fibrous wall. Mr. Keynes has long taught that by axillary dissection it is impossible to remove all the involved lymph nodes if the disease has spread that far, whilst if it has not it is unnecessary. Glands removed after full radiotherapy may show what we term viable carcinoma cells, but these cells are confined by the fibrosis induced around them. There is a school of teaching to-day which maintains that, in certain types of growth, radical mastectomy

may do more harm than simple removal together with radiotherapy.

The progress of surgery has been towards more extensive removal. This development occurred some 70 to 80 years ago, and is recorded in the writings of Sir Henry Butlin. His work shows what various types of pure surgery could achieve without radiotherapy. In the first edition of his book, "The Operative Treatment of Malignant Disease," first published in 1887, the leading theme is that an operation should be adapted to the nature and condition of the disease in each part of the body, and should not be dictated by theoretical considerations unless these were founded on the most careful observations. He was criticised as being the advocate of partial operations. Mitchell Banks of Liverpool obtained a cure rate of 15%, Butlin only 10%. Butlin objected to the Banks' operation as being needlessly large and dangerous, and pointed out that their respective operative mortality was 15% and 10%.

In 1898, with the help of his chief assistant, J. Preston Maxwell, Butlin traced 126 out of 129 patients that he had personally operated on at St. Bartholomew's Hospital and in private practice. He records his observations as follows: "My conception of Cancer of the Breast, as I knew it then, was that it consisted in an alteration in a certain part of the breast; that it spread locally from that part as from its centre, and always spread farther than the naked eye or touch could distinguish, that it affected the integument immediately over it, and again spread in all directions from that point; that some juice or material which could not be perceived was carried after a time to the lymphatic glands, and was capable of originating the similar disease in the glands; but that the lymphatics between the primary disease and the glands were in most cases free from the disease, and that the glands might entirely escape infection if the disease was very slow in progress or was removed at a sufficiently early period.

With this in mind I carried out an operation in which the tumour became the centre. . . . The disease and about an inch in every direction was removed; the fascia beneath the tumour and a part of the muscle was taken away . . . and the axilla was cleaned out only if the glands were enlarged.

My attitude in regard to operations for Cancer of the Breast remained much the same until 1894 . . . but towards the end of

1894 I happened on Professor Halsted's paper. He had taken for the scientific basis of his operations the investigations of Heidenheim on "The Causes of Local Recurrence after Amputation of the Breast" (Langenbeck's Archives, Vol. 39, 1889). I had overlooked this paper . . . and had not studied thoroughly another paper on the "Surgical Anatomy of the Breast and Axillary Lymphatic Glands" reprinted from the Edinburgh Medical Journal, 1892, which the author, Mr. Harold Stiles, had been so good as to send me. Heidenheim came to the conclusion that every mammary gland in which a nodule of cancer exists is in very wide extent diseased, and that epithelial cells are carried away over wide areas in the lymph vessels of the mamma. . . . The pectoral fascia is very rich in lymphatics which are early occupied by metastases of cancer, the lymphatics of the breast communicate with those of the skin through the great lymphatic plexus beneath the areola . . . and from this plexus it is conveyed to the inferior axillary glands through two large afferent vessels. Stiles drew out a very different scheme of the anatomy of the breast from that which formerly existed. He fully concurred with Heidenheim in believing that cancer cells are soon and widely conveyed through the lymphatics of the breast, and particularly towards the pectoral fascia. He discovered lymphatics containing cancerous emboli:—

1. In the connective tissue processes radiating from the tumour into the surrounding breast tissue or circum-mammary fat.
2. In the breast tissue remote from, as well as close to, the tumour.
3. In the connective tissue septa separating the lobules of circum-mammary fat.
4. In the so called "ligaments of Cooper," where they often lead to small disseminated cancerous nodules in the corium.
5. In the retro-mammary tissue and pectoral fascia. 'Occasionally the glands above the pectoralis minor, in the apex of the axilla and under the clavicle, are diseased, while the pectoral glands are normal. This points to the probability that some of the lymphatics from the mamma pass to join glands at the upper part of the axilla direct, without entering the pectoral group.'

"I have never been in the habit of allowing myself to be rashly led into the performance of extensive operations which are based solely on theoretical considerations, even when supported by microscopical inves-

tigations unless the theory was also supported to a reasonable extent by clinical observations. When, then, I had read the papers of Heidenheim and Stiles, I began to consider how far their investigations accorded with what I had actually seen in practice. . . . The number of cases in which there was recurrence in the breast region (not the axilla) was remarkable. Some were in the tissues beneath the skin, and I quickly called to mind several cases in which the recurrent tumour had been in the muscle. For instance, in 1891 I removed the breast of a lady for a small tumour immediately beneath the nipple, which was much retracted. I made a note at the time to say that it was very moveable on the pectoral muscle. The fascia was roughly cleared off the face of the pectoral but none of the muscle was removed. In 1894, and again in 1896, I removed a small recurrence from the substance of the pectoral muscle . . . some distance beneath the middle of the scar.

I therefore come to the conclusion that a few more patients in every hundred might be saved by a more complete removal of the mammary gland, a free removal of the whole thickness of the pectoral muscle beneath the disease and by a more systematic and careful dissection of the axilla. Halsted's operation appeared to me to answer better to these indications than any other, and since 1895 I have made it my routine operation. Two objections have been made against it by some of my colleagues, first, that it is very dangerous to life; second, that the movements of the upper extremity are likely to be greatly crippled by a wholesale removal of the muscle. . . . So far from the movement of the arm being seriously restricted, I have been surprised to find that it is, as a rule, better than when the muscle is left behind. It depends almost entirely on the amount and piece of skin which is removed. In closing the wound, the greatest care should be taken to supply a very good covering of skin to the axilla. If there is no subsequent tension there, the arm can be freely moved."

BUTLIN'S RESULTS

His "alive" cases are all over three years, and in most tables imply 3-15 years survival.

Group I.—Removal of portion of the breast either with or without removal of the glands.

Total: 23 (glands removed in 18).

Died of operation	...	...	...	...	2
Dead or alive with local recurrence	...	...	...	...	9
Died of cancer without local recurrence	...	...	...	...	5
Alive and well	...	...	...	(26%)	6
Untraced	...	...	...	...	1

Group II.—Removal of breast only.

Total: 10.

Died with local recurrence	...	...	...	...	3
Died of cancer without local recurrence	...	...	...	...	1
Alive and well	...	...	...	(60%)	6

Group III.—Removal of breast and lymphatic glands (not in one continuous mass).

Total: 83.

Died of operation	...	...	...	...	4
Untraced	...	...	...	...	2
Died or alive with recurrence	...	...	...	...	39
Died of cancer without local recurrence	...	...	...	...	16
Died of other causes	...	...	...	...	5
Alive and well	...	...	...	(21%)	17

Complete results of these three groups:—

Total	...	...	...	...	116
Alive and well	...	...	...	...	29
				(3 to 15 years)	

Five years and over

Group IV.—Halsted's Operation.

Total: 13.

Alive and well over 3 years	(70%)	9
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The operation in all cases was adapted to the apparent requirements of the case, but were procured under very disheartening conditions . . . there were many in which the axilla was full of cancerous glands and several in which the primary tumour was ulcerated, and some had enlarged supra-clavicular glands.

Great advances in the treatment of cancer have occurred since Butlin's day, and our knowledge of the disease is considerably greater. On the other hand some of the questions about carcinoma of the breast

The Second Exhibition of Painting at Bart.'s

The last receiving day for entries for the Exhibition which is to be held in the last week in September, is Monday, September

15th. The Exhibition is to be opened on the 19th of that month. Contributions should be left at the Medical College Library.

which worried him still worry us now, not the least of which is the correct treatment to apply in each particular individual. The variability of anatomy of the macroscopic tumours, and of their minute structure pose a problem for which there is no single answer. In deciding upon treatment, surgical skill must be tempered by the consideration of what harm can be done, such as the opening up of pathways to a beast ever eager to migrate through a line of least resistance. Surgery is rational as a method of treatment only in so far as its use ensures total elimination or non-interference with reactions which confine a growth. It is obvious that hope in the future can only lie in methods which will

alter the character of the cells and restore them to normal behaviour so that they obey the rules and orders of physiological control. Meanwhile, in the words of Anatole France: "Let us not lightly cast aside things that belong to the past, for only with the past can we weave the fabric of the future."

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THE OLD AND THE NEW

by GEORGE GRAHAM

IN the last 51 years I have had three operations, and I think the conditions under which they were performed and the anaesthetics used may be of interest. At the age of 18 my adenoids were eradicated, and a large spur removed from my nasal septum. The operation was performed by a surgeon then at the height of his reputation, both in and outside this Hospital. It was carried out in my bedroom on two tables. The instruments were boiled in the room, and when I innocently enquired why this was necessary, I was told that it made them sharper. Unfortunately a tag of adenoids was left behind, and I told my family doctor, who was responsible for sending me later on to become a student of the hospital, and to whom I am, therefore, deeply grateful—that something was moving up and down in my throat. Unfortunately he could not see anything, and it was not till an offensive nasal discharge and nasty taste in my mouth had developed that I was taken to see the surgeon again. He snared the tag of adenoids, but I developed constant trouble with nose bleeding, crusting and a liability to sore throats. On coming to the hospital 3½ years later, I was treated for a severe granular pharyngitis and an ulcer on the septum by various members of the Throat Department. Eight years after the operation I was advised to stop smoking, which was no hardship as

my throat was often too sore to do so. The granular pharyngitis soon ceased to trouble me, but the crusting and discharge continued to cause much minor discomfort until some 15 years ago, when I was advised to avoid using any menthol preparations because they damaged the cilia. Since then a mixture of vaseline and liquid paraffin put up each nostril at night is sufficient to prevent any discomfort. I spent some money, which I could ill afford when I was young, on nasal sprays etc. in the course of 36 years, but I have saved vastly more by not having smoked for 43 years. I am very grateful to those who looked after me, and I am afraid I was often a great nuisance to them.

The second operation was for a congenital hernia, when I was forty-two. I was admitted to Etherington-Smith Ward, which was reserved for Chief Assistants and Residents. The operation, by the late Professor George Gask, was a complete success and my abdominal muscles successfully sustained—some ten years ago at Friern Hospital—the not inconsiderable weight of the heaviest member of the present staff.

The third operation was performed by Sir Archibald McIndoe some five months ago for the removal of my palmar fascia, to prevent a Dupuytren's contraction, and was performed in the London Clinic. It has been successful and I do not anticipate that it will

affect my golf, though as the length of my shots gets less year by year it may be difficult to determine. I am shocked that so very few people recognise the association of Garrod's pads on the knuckles and Dupuytren's contraction. They were first described by Sir Archibald Garrod, and consist of hard masses which may be quite large, but are usually small. They are so hard that they suggest a bony swelling, but Hale White's X-rays and sections showed that they and the palmar nodule were formed of fibrous tissue. They are, I believe, caused by minor knocks on the knuckles. If trauma is avoided the nodule gets smaller. I have never seen a patient with either a hard nodule in the palm or a typical Dupuytren who did not have definite Garrod's pads, though they might be very small. McIndoe, with his much larger experience, has found them in 80% of his cases. I believe that the hard nodule in the palm arises as a result of minor but long continued trauma on the palm in a person. I believe that there was a close association between his pads and Dupuytren's contraction and when I first showed him my knuckles 31 years ago he suggested—very unwillingly—that I might develop a Dupuytren later on, which I did 28 years later. Both my father and one brother had Dupuytren's contractions and Garrod's pads. I taught about the association of the two all my time at the hospital but apparently without success.

The type of anaesthetic used in the three operations is of considerable interest. For the first one, there was no premedication and I stood and walked about the room while the tables etc. were being arranged. I think I was given gas and ether and I have no unpleasant recollections. My mother complained that she was left alone to look after me while I was still unconscious, since a nurse was not considered necessary. I was not sick and I have no recollection of any abdominal discomfort. For the second operation I was given morphia and scopolamine and then gas and oxygen and ether. The induction was quite pleasant and I was not sick. But I had considerable abdominal discomfort, with some flatulence and distension, for the next two days. It was impossible to pass any wind and micturition 24 hours after the operation was very difficult to start. All these symptoms disappeared after my

bowels had been opened, but it was an unpleasant two days.

The third operation was not started till 4.30 p.m. as I had work to do in morning, and did not get to bed till 12 noon. I was then given some Bovril and a biscuit, and read for the next four hours. I had talked to Dr. John Hunter about my dislike of morphia or omnopon, and as he never uses them, he arranged for me to have 100 mg. of Pethidine and 1/100 gr. (about 1½ mg.) of atropine sulphate. These were given at 4 p.m. in separate injections, and I tried to go to sleep. At 4.30 p.m. I was asked to move on to the stretcher and I was conscious of the journey up in the lift, of the prick of the pentothal injection in my arm, and saying I had no pain in my fingers. For the next hour I was given gas and oxygen only. I was waked at 8.30 p.m. and told to breathe deeply, which I did a few times only, as I was soon fast asleep. I woke at 2.30 a.m. or so, for a short while, to pass urine and have some milk and a biscuit. I had to be wakened at 8.45 a.m. for a wash, and was mildly scolded about 10 a.m. because I had not done any deep breathing. I did not have the slightest abdominal discomfort or difficulty in micturition, and ate my meals that day with pleasure.

It is of course possible that the abdominal discomfort was due to the hernia operation, but this was a simple condition as I had noticed it for the first time a few weeks before. I think it is much more likely to be due to the morphia I was given. I know that it can sometimes cause vomiting even when no anaesthetic is given, and I have the impression that it and not the anaesthetic is responsible for the vomiting and general discomfort after the operation, which still occurs in some cases. One of my patients was very sick after two abdominal operations and thought it was due to omnopon. When she went into hospital for an operation on her foot, she told the nurse, the sister, the house surgeon, that she was sensitive to omnopon and asked if she could have something else. Perhaps she said too much, or the house surgeon did not know that omnopon was a morphia preparation, but she was given morphia and she vomited much more than she had done after either of the abdominal operations. Recently an old and experienced doctor had to have an operation on his gall bladder. I knew that he was badly upset by tincture of opii and

I suggested to Dr. Frankis Evans—who holds strongly to the opinion that morphia compounds are a frequent cause of vomiting—that pethidine and atropine only should be given as a preparation before the pentothal, gas and oxygen. This was done, and the doctor, who had seen many patients exceedingly uncomfortable after operation, was delighted to find that he had no abdominal distension and that he was able to pass wind soon after recovering consciousness.

The late Dr. Drysdale used to pose his clerks with this question. "How do you think knowledge spreads in this hospital?" To which the wary clerk would reply, "I don't know, sir." "Well, A. knows something which B. doesn't. A. doesn't tell B. either because he doesn't know that B. doesn't know it or doesn't think B. would like to be told. B. doesn't ask A. because he doesn't know that A. knows something he doesn't. But A. teaches his own house physician and he tells B.'s house physician, who tells B." The time which this process takes—rather like a double Knight's move—depends partly on

the receptivity of B.'s house physician and his antagonism to anything coming from A.'s firm, and partly on the awe in which B.'s house physician holds B. and partly on B.'s receptivity to anything proposed by his house physician.

May I, as an elderly physician, wont to rush in where angels fear to tread, suggest that the A.'s and B.'s should meet directly on this point and decide to ban morphia and omnopon—not only in pre-operative treatment but in most, if not all cases in which morphia is used as a pain-killer. It may be that pethidine in the usual doses is not such an efficient pain-killer as morphia, but I hope the experiment will be tried. Doubtless some people are upset by pethidine, but the number seems much fewer than those sensitive to opium and something yet better may be discovered.

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WHITE, W. HALE, *Quart. J. Med.* (1907-8), **I**, 479.

Christian Union

The Annual Weekend Houseparty, from May 16th to May 19th, was held at Holmbury St. Mary near Dorking. Twenty-seven students and nurses were there and took part in a series of four Discussion Bible Studies on Christian Discipleship led by Jim Packer, an Ordinand from Wycliffe Hall, Oxford. The Host and Hostess were Dr. and Mrs. D. P. Cocks from Ealing.

On Saturday afternoon there was a cross country ramble to Leith Hill, and on Sunday Abinger and Peaslake were visited. A very enjoyable time of spiritual and mental refreshment resulted in a new insight into the daily practical significance of the Christian Faith. Such opportunities for Christian fellowship are rare and we give thanks to God for this blessing to our Christian Union.

Other activities included the showing of a film entitled "Hidden Treasures" in the Clinical Lecture Theatre. Ranging from the galaxies of outer space to the unicellular denizens of a drop of pond water, the film showed that if the Creator cared in such a way for big and little things alike His concern for the highest of His creatures must be infinitely greater.

Marriage

Dr. W. N. A. Taylor (Bart.'s 1945-1951) son of the Rev. and Mrs. W. R. O. Taylor of Underriver, Sevenoaks, was married to Dr. N. L. Earland, daughter of the late Mr. E. F. Earland and of Mrs. J. Earland of Sidmouth, Devon, on June 7th, 1952, at St. Margaret's Church, Underriver.

Deaths

We regret to record the deaths of the following Bart.'s men:

Maurice Grey Pearson, F.R.C.S., suddenly at his home in Durban on May 13 last, aged 80.

Dr. G. J. R. Lowe at Lincoln on March 31 last, aged 81.

Colonel Douglas Crellin, M.C., R.A.M.C., at Harrogate on May 15 last, aged 62.

Dr. A. M. Amsler at Hawkhurst, Kent on June 11, aged 76.

Dr. John Taylor, recently Lecturer in Forensic Medicine to the Hospital, in London, on June 16th, aged 66.

Sir Percival Horton-Smith Hartley, C.V.O., M.D., F.R.C.P., in London on June 30th, aged 84. An obituary notice will appear in our next issue.

LEONARDO DA VINCI'S ANATOMY OF THE HEART

by K. D. KEELE, M.D., F.R.C.P.

Leonardo da Vinci's amazing power of vision penetrated into a wide range of natural phenomena, from the infinitely large, such as the movements of the sun, moon and stars, to the infinitely small such as the movements of the parts of the valves of the heart—and always these observations were urged on by his persistent desire to understand the laws governing them.

It is only by studying his notebooks that we have come to know how scientific was the mind behind that vision of his. The greater part of their 6,000 pages is devoted to mathematics and mechanics. "Mechanics," says Leonardo, "is the paradise of the mathematical sciences because by means of it one comes to the fruits of mathematics." From this point of view he applied himself to the problems of "local movement" in animal and human bodies.

It is in his studies of the movement of birds in flight that he expresses his grasp of those laws of motion we name after Newton. And it was from his work on the action of the muscles around the hip joint that he expressed the general law regarding relaxation or stretching of antagonist muscles formulated by Sherrington.

The deep obscurity which overtook Leonardo's anatomical work is illustrated by the fact that as recently as 1907 it was claimed by Roth that Leonardo had never dissected a body, a statement made in ignorance of Leonardo's own description of 12 completed dissections, and of his detailed descriptions of his technical problems, let alone the evidence from his drawings of structures unknown to anyone else in his day.

The difficulties of obtaining bodies for dissection, though obviously great, are never mentioned by Leonardo. Dissection he often carried out in the hospitals in Florence, Milan, or Rome, but in the absence of any method of preserving the body, work had to be completed quickly. Those of us who have attempted dissection under ideal conditions with an accurate manual to guide us, will appreciate Leonardo's remarks about his difficulties:—

"And you who say that it is better to look at an anatomical demonstration than to see these drawings, you would be right if it were possible to observe all the details shown in these drawings in a single figure, in which with all your ability you will not see, nor acquire a knowledge of more than a few veins. While in order to obtain an exact and complete knowledge of these I have dissected more than ten human bodies, destroying all the various members, and removing even the smallest particles of flesh which surround these veins . . . And as one body did not suffice for so long a time, it was necessary to proceed by stages with so many bodies as would render my knowledge complete; and this I repeated twice over in order to discover the differences."

He goes on to point out that, "though possessed of an interest in the subject you may perhaps be deterred by natural repugnance . . . or fear of passing the night hours in the company of these corpses quartered and flayed and horrible to behold."

We recognise these as the words of the authentic pioneer searching out the geography of the "lesser world," as Leonardo called the human body. "There shall be revealed to you in fifteen complete figures the cosmography of the lesser world . . . placing before your eyes the whole figure and capacity of man in so far as it has local movement by means of its parts."

The emphasis on "local movement" will here be noted—for this formed the basis upon which he founded the greater part of his physiological studies. This is the reason that Leonardo achieved his greatest success in the study of the muscles and their action.

It was one of Leonardo's strokes of genius to appreciate that the heart itself is a muscle, a truth that had been concealed for over 1200 years by Galen's repeated statements to the contrary. Leonardo describes the heart as "a vessel made of thick muscle, vivified and nourished by the artery and vein as are the other muscles," and he does not fail to follow up this statement with a drawing of the heart showing with beautiful clarity the origins and course of both coronary arteries (Fig. 1). Several other drawings are devoted to the coronary arteries and veins, and to elucidating the regions supplied by each main branch.

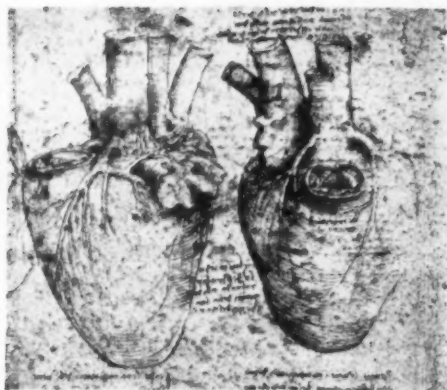


Fig. 1.—Drawings of the heart from two aspects showing the origin of the coronary arteries and a section across the pulmonary valves

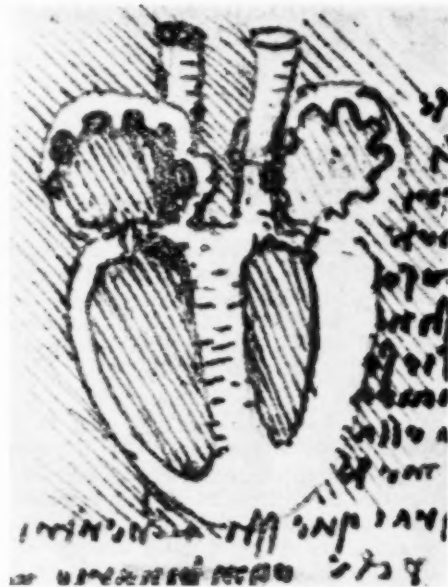


Fig. 2.—Diagram of the four chambered heart showing the atria and ventricles of comparable size. The muscle of the auricle is represented by a serrated line and the invisible interventricular pores by transverse lines.

If the heart is a muscle then it should have a nerve supply. Leonardo looked for this particularly whilst he was dissecting out the vagus nerves. He describes the left vagus as "descending to the base of the heart (pericardium) and I believe that this is the nerve that enters the heart."

Having established that the heart is a muscle, Leonardo proceeds to define and draw its structure in great detail. To gain a comprehension of the muscles and valves he draws longitudinal and transverse sections, inflates the cavities with air in order to bring out in relief the fine trabeculae carneae, dissects out each of the valves and their cusps, drawing them also in position from above and below, open and closed, and finally makes a glass cast of the aorta to study the movement of the cusps of the aortic valve.

This work was proceeding for most of his lifetime, and it seems that it was as late as 1513, some six years before his death, that it resulted in his great discovery that the heart consisted essentially of four chambers, and not two only as had been held since the time of Galen. The two new chambers now included in the heart Leonardo called the "upper ventricles or auricles"; they correspond to what we now describe as the atria.

Galen had described the small auricular appendages now termed auricles, attributing to them the function of taking up excess blood or air in emergency. Leonardo realised that these small appendages were only part of a bigger chamber, the atrium, and that this "upper ventricle" contained as much blood as the lower, and that it contracted and pushed its contained blood into the lower ventricle. To make this quite clear he writes pages of emphatic notes with unfortunately only a few drawings of which the clearest is shown here, considerably enlarged (Fig. 2). In it the "upper ventricles" it will be noticed, are of comparable size with the lower. The serrated lining to the atria is inserted to represent the muscle and show the source of the power of contraction of these atrial chambers so that they can discharge their blood into the lower ventricles.

It will be noticed that the interventricular septum is crossed by transverse lines. They represent the invisible pores whose existence Leonardo still accepted from Galenic tradition.

But Galen cannot be blamed for a further error illustrated by this figure. If Leonardo was right in thinking that the blood was ejected from atria to ventricles, he was wrong in believing that when the lower ventricles contracted they returned most of the blood to the atria, so that



By courtesy of Harvey and Blythe, Ltd.

Fig. 3.—The mode of closure of the aortic valves. This page of notes is devoted to details regarding the construction of a cast of the aorta, and studies of the mode of closure of the aortic valves.

the main movement of blood in the heart was like a shuttle to and fro "in flux and reflux" as he describes it.

This conception of Leonardo's resulted from his acceptance of Galen's idea of the heart as the chief source of body heat in warm-blooded animals. Leonardo, from his studies in physics had found that heat was created when fluids were put into frictional movement. He thought to have found such a process going on in the heart as would provide a mechanical explanation for its production of heat, an explanation far preferable to that of some mysteriously "innate" quality postulated by Galen. Such friction, according to Leonardo, was produced by the blood being pumped to and fro from upper to lower ventricles "in flux and reflux" so that "the friction it makes within itself, whirling round in diverse eddies, and the friction which it makes against the walls . . . are the cause of the heating of the blood."

It is amazing how swiftly Leonardo stumbles from a great

discovery, from half the truth, into the pit of error. Perhaps we may read in this a lesson to all those who attempt scientific research! For this conception of heart action and function is incompatible with that of the circulation of the blood as described by Cesalpino and Harvey, who did not seriously challenge Galen's erroneous hypothesis that the heart was the "innate" do rightly questioned.

As a result of this theory of flux and reflux in the heart Leonardo considered that the valves of the heart normally allowed regurgitation before they closed "with perfect shutting." Yet in his studies of the aortic valve his own results repeatedly demonstrate early "perfect shutting."

For some reason the aortic received more intense study than all the other valves of the heart. Several pages of manuscripts—all written in the last years of his life—are devoted to the movement of blood through the aortic valve, and its mode of closure. The results are well summarised on the page here illustrated. (Fig. 3.)

In the top right corner is an outline sketch of a cast of the aorta inside which are written the words "A form of gypsum to be inflated, and a thin glass within—and then break it from head and foot in a, and n. But first pour wax into the gate of a bull's heart that you may see the true form of this gate." This he tells us was done "to see in the glass what the blood does in the heart when it shuts the openings of the heart." Elsewhere he says, "Make the glass trial and move in it the pannicles (cusps of the valve)".

It was as a result of these experiments that he concluded that the aortic valve cannot be closed by blood pressing down on it from above, for that would fold up the valve leaflets, not bring them into opposition—a process illustrated in the diagram at the top of the page to the left of the sketch of the cast.

What does occur is shown in two figures in the lower half of the page to the right, where blood is shown passing through the aortic valve and curling round to form eddies, which fill the clearly drawn sinuses named after Valsalva, and whirl into the aortic valve cusps from below, so filling them out and bringing the valves into contact in a vertical, not horizontal plane.

Above the main primary may be seen secondary "contrary eddies." These Leonardo thought retarded the velocity of the blood, which would diminish therefore as the blood was propelled through the arteries "until the impetus consumes itself."

How correct are these observations on the movement of the blood about the aortic cusps? Until the experiment is repeated no one can tell.

It will be noticed that in these experiments Leonardo no longer is concerned with the presence of air in the left ventricles, which the traditional view of his day held was the case. To test this hypothesis he performed the experiment of inflating the lungs of an animal with bellows and, failing to find any air in the left ventricle, he concluded, "To me it seems impossible that any air can penetrate into the heart through the trachea."

Leonardo made other observations, such as those on the beating heart of the dying pig, and the synchronisation of "the shutting heart" the apex beat, and the pulse at the wrist, in which he appreciated that the pulse is produced by the artery being filled by blood from the heart—all findings which cut great gaps in the structure of the Galenic speculations. But it is one thing to hit the target and quite another to destroy it. And if Leonardo failed to follow up these penetrating observations it may well have been because he discovered them so late in his life. It should be realised that many years of his life were spent in perfecting his clear and true ideas of the anatomy of the heart. But it must be noted, too, in all justice, that Leonardo himself advanced an erroneous hypothesis regarding heart action which probably obscured the true significance of many of his own observations. For example, in answer to the question of the quantity of blood brought to the heart, Leonardo, confused by his own conception of the heart as a friction-heating machine, can make no accurate computation like Harvey, but only say "There is great weight." Feeling that such a "great weight" of blood could not be consumed by the tissues he postulates the return of "superfluous blood" to the intestines by the mesenteric arteries. A kind of circulation of blood from intestine or liver to the tissues and back is thus suggested—but it is a false one.

Surveying Leonardo's work on the heart one must remember to measure his achievement from a starting point but little above zero—and that little distorted in the mirror of corrupt Galenism. One sees him struggling to correct those distortions, and he finally leaves us with an anatomy of the heart incomparably more true than he found it. And yet with its many loose clues and suggestions, one is left with the sense of sadness which surrounds fragments of a great work unfinished.

Paul Burrows

It is with deep regret that we announce the death, after a short illness, of Paul Burrows. Many here have lost a good friend and the Hospital one of its best students.

A fuller note will be published in our next issue.

HOSPITAL APPOINTMENTS

The following appointments to the Medical Staff have been made:—

Registrar—Ear, Nose & Throat Department (Whole-time)

Mr. R. MacN. Jones (vice Mr. R. G. Boyd and Mr. B. Cohen) as from 1st July, 1952.

Casualty Registrar (Surgical)

Mr. R. D. Nicholson (vice Mr. M. F. Hunt) as from 1st July, 1952.

House Appointments at Smithfield—1st July to

31st December, 1952

Dr. G. Bourne	M. W. Sweet-Escott
Dr. R. Bodley Scott	Miss L. Feldberg
Dr. E. R. Cullinan	D. D. Cracknell
Dr. K. O. Black	B. D. Lascelles
Dr. A. W. Spence	G. Haysey
Dr. N. C. Oswald	H. T. Davies
Dr. E. F. Scowen	G. P. Greenhaigh
Dr. W. E. Gibb	C. W. H. Havard
Prof. R. V. Christie	J. H. Briggs
Dr. G. W. Hayward	M. G. Price
Mr. J. B. Hume	B. R. Whittard
Mr. A. H. Hunt	J. A. Girling
Mr. R. S. Corbett	G. S. Banwell
Mr. A. W. Badenoch	J. D. H. Cave
Mr. J. P. Hosford	R. V. Fiddian
Mr. E. G. Tuckwell	H. B. Ross
Mr. C. Naunton Morgan	P. D. Matthews
Mr. D. F. E. Nash	M. J. A. Davies
Prof. Sir J. Paterson Ross	E. W. Evans
Mr. J. B. Kinmonth	A. S. Blake

Casualty House

Physician: H. I. Lockett

Children's Department:

Dr. C. F. Harris	A. E. Dormer
Dr. A. W. Franklin	Mrs. G. E. M. Tarnoky

E.N.T. Department:

Mr. Capps	Mr. Jory	G. E. M. Thomas
Mr. Hogg	Mr. Cope	

Skin & V.D. Depts.:

Dr. MacKenna	Dr. Nicol	I. A. Horton
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Eye Department:

Mr. Philips	Mr. Stallard	R. F. Jones
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Gynæ. & Obs. Depts.:

Mr. Shaw	Mr. Beattie
Mr. Fraser	Mr. Howkins

Interns:

B. St. J. Brown (Midwifery)	
D. K. Williams	(Gynæcology)

Junior H/S:

R. C. Cochrane

Anæsthetists:

N. E. Winstone (S.R.A.)
P. H. Simmons
A. A. Bapty
Mrs. H. S. Hopper
L. C. Dean

Dental Department:

Orthopædic Dept.:

(Accident Service)

At Hill End Hospital

E.N.T. Department:

Orthopædic Depart.:

D. P. Q. Smith
H. A. J. Thomas
G. I. Verney
R. G. Huntsman
J. A. Williams

Thoracic Depart.:

Neuro-Surgical Depart.:

Anæsthetists:

J. Barnes
R. S. Atkinson
F. A. Almond

Alexandra Hospital

R.M.O.:

M. B. Watts

SPORT

*"Better to hunt in fields, for wrath unbought
Than fee the doctor for a nauseous draught.
The wise, for cure, on exercise depend:
God never made His work for man to mend."
—(John Dryden.)*

Sports Day

On May 24th, the Athletic Club held the 69th annual sports at Chislehurst. Mr. White prepared the track as smooth as they would have us believe is Curtis Gin. The fickle English sun decided that she too would have a day out, so that the setting for our sports was as perfect as we had dared to hope.

The Dean, Dr. Harris, presided at the sports, and Mrs. Harris distributed the prizes. Many of the staff shed their formal attire and manner, and came down at their week-end ease to see the students perform. Some of the chiefs gave invaluable assistance in judging and timing the events. To show their versatility the surgeons contrived to hold the watches, whilst the physicians held the tapes.

The tea deserves special comment. For 2s. less than last year the women students provided excellent refreshments. As 2s. will buy more than a pint of other excellent refreshment, we hope this innovation will continue and that the outside catering company will no longer pay their super-tax from the pockets of Bart's students.

The sports were followed by a dance in the pavilion, arranged by Mr. D. Craggs, virtuoso of the gramophone. Many couples, and alas, singles, sat outside on the lawns, whilst others went further afield.

Leslie Pringle, the Club's secretary, worked many days and nights to make this meeting the success that it was. No less untiring was the work of the captain, A. H. Macdonald, and Miss Bott. All who attended agreed what a successful day it was.

CRICKET

2nd XI v. LONDON HOUSE, on Saturday, June 7th at Chislehurst—Match lost.

Bart.'s: 107 (Aubin 29, Gillett 26).

London House: 108 for 3.

"A" XI v. RIDDELL'S ROVERS, on Sunday, June 8th, at Chislehurst—Match drawn.

Riddell's Rovers: 243 for 10 declared (Patterson 3 for 26, Winton 3 for 39).

Bart.'s: 63 for 1 (May 35 n.o., Nicholson 28 n.o.). Rain stopped play.

2nd XI v. OLD GOSFORDIANS, on Saturday, June 14th, at Kidlington, Oxford—Match lost.

Bart.'s: 85 (Kellett 28, Freeman 21).

O'd Gosfordians: 86 for 7.

1st XI v. HORLICKS, on Sunday, June 15th, at Chislehurst—Match won.

Bart.'s: 175 (Murley 49, Aubin 42, Ford 35).

Horlicks: 104 (Clappen 5 for 33, Braimbridge 2 for 4, Ford 2 for 16).

2nd XI v. BARKING, on Saturday, June 21st, at Chislehurst—Match lost.

Bart.'s: 115 (Gawne 24).

Barking: 116 for 4.

1st XI v. R.N.V.R., on Saturday, June 21st, at Swakeley's—Match won.

R.N.V.R.: 143 (Ford 5 for 22, Clappen 3 for 31).

Bart.'s: 144 for 7 (Ford 37, Nicholson 30, Aubin 25, Jones (sub.) 20 n.o.).

1st XI v. PUTNEY ECCENTRICS, on Sunday, June 22nd at Chislehurst—Match lost.

Bart.'s: 86 (Ross 29, Ford 25).

Putney Eccentrics: 88 for 5 (Ford 2 for 41).

SWIMMING

The Swimming Club has had a moderately successful season, hindered by a lack of support which has caused the Club to lose the weekly hire of the Murlin St. Public Baths.

The Water Polo team has played well to finish second equal with St. Thomas' Hospital in the Inter-Hospital Polo League. An outstanding success of the year was the winning of the Inter-Club Invitation Relay race held by the Otter S.C. At the United Hospitals Annual Gala the Club gained places in three events.

L. Cohen has been appointed Captain of the United Hospitals Swimming Club. F. Low and P. Bliss have also represented the U.H.S.C. on several occasions.

Honours were awarded to L. Cohen and P. Bliss.

WOMEN'S HOCKEY CLUB

The Annual General Meeting of the Club was held on Thursday, May 15th, with the President, Professor Wormall, in the chair.

The following officers were elected for the season 1952-1953:—

Captain, Miss A. Tressider; vice-captain, Miss M. Bott; secretary, Miss R. Stephenson; match secretary, Miss E. Garrad; treasurer, Miss S. MacVie; committee member, Miss K. Reid.

Honours were awarded to Miss A. Caldwell. Colours were awarded to Miss A. Tressider and Miss P. Lindop.

BOAT CLUB

The Club has been very active throughout the summer, taking part in regattas at Chiswick, Walton, Reading, Marlow and Kingston since our victory in the London University Allom Cup Regatta in May.

At Chiswick Regatta the senior four were the victims of bad luck; heavy wash from a launch pushed us into our opponents, resulting in a bent rigger, which prevented the crew from completing the course. At Walton the same crew were the victims of bad umpiring, being badly fouled by their opponents, who were not disqualified.

Not until Reading regatta, and after a change in the order of the crew, were they able to show their true merit. Although they had only been together in the new order for a short time, they beat the National Provincial Bank, but were just beaten in the semi-final by a good crew from Corpus Christi College, Cambs. In this race stroke strained a muscle and was unable to row his best, so that Corpus were just able to take the lead near the finish.

Junior fours at Reading were unsuccessful. At Marlow Regatta our eight drew Lady Margaret B.C., Cambs. and St. John's College, Oxford. As the former were disqualified and we beat the latter fairly comfortably, we progressed to the semi-final, where we were beaten by Wallingford Rowing Club.

At Kingston Regatta we were unable to make a serious attempt to defend the Dean Challenge Cup won last year. We entered a scratch four, containing three members who had not rowed before this summer, and a novices' four consisting of four new members. The former, to their great surprise, defeated Kensington R.C. in their first heat, but were insufficiently fit to deal with a four from St. George's Hospital in their next heat. The beginners' four rowed enthusiastically but lacked the experience for success in their first regatta. However, they are potentially good oarsmen, and with further coaching and experience will undoubtedly win a cup for Bart.'s before long.

Another junior four has entered for Exeter Regatta in August.

Thirty-two members of the Club have been actively rowing this summer.

Crews:

Senior Four: Bow, F. R. Spink (steers); 2, G. F. B. Birdwood; 3, J. F. G. Pigott; str., D. H. Black.

1st VIII: Bow, C. J. W. Hunter; 2, R. J. Knight and P. G. Burton; 3, R. I. D. Simpson; 4, J. D. Salmon; 5, P. J. G. Smart; 6, J. M. Jones; 7, R. G. D. Newill; str., B. P. Harrold; cox, F. J. C. Millard.

Kingston Fours. "A" Crew: Bow, J. Randall; 2, I. H. Backhouse; 3, R. Goldsmith, str., R. G. D. Newill, cox, F. J. C. Millard. "B" Crew: Bow, R. P. Doherty; 2, M. A. Bedford; 3, T. P. Ormerod; str., T. W. Bolton; cox, M. G. Kiefty.

BOOK REVIEWS

"I never read a book before reviewing it: it prejudices a man so."—(Sidney Smith.)

THE TISSUES OF THE BODY, by W. E. Le Gros Clark. O.U.P. 3rd Edition, 1952, pp. 407, Figures 124. Price 30/-.

Professor Le Gros Clark says in his preface to this edition—"It will be generally accepted that an introductory textbook should be not only informative: it should also endeavour to be intellectually stimulating." This dictum should endear him to all medical students who are bombarded by publishers with textbooks whose length and dullness is exceeded only by their price. Professor Le Gros Clark—an old Bart's man—is one of the most distinguished anatomists alive today, and his book is a work of real scholarship. It is well and interestingly written and is an excellent introduction to anatomy. All Charterhouse students should beg, borrow, buy or steal it.

AIDS TO PHYSIOLOGY, by H. Dryerre. Fourth edition 1951. Baillière Tindall and Cox, pp. 325, figs 66. Price 7/6.

This little book is, like the others of the series, a readable one; it is *not*, like others of its type, an unreadable conglomeration of facts. In any condensed version of a large—one might almost say limitless—subject there are bound to be statements with which one could disagree; in this case there is no need for such disagreement for although there are a few such incorrect statements it is difficult to see how they could be avoided. Here is a book that can be confidently recommended to pre-clinical students, and one that will make a useful pocket-book for those in their clinical years.

STATISTICS FOR MEDICAL AND OTHER BIOLOGICAL STUDENTS, by L. Bernstein and M. Weatherall, pp. 180; 18s. London; E. & S. Livingstone, 1952.

The most important thing about this book is that it is based on a course of lectures given by the authors to pre-clinical medical students at the London Hospital Medical School. It therefore raises the whole question of the place of statistics in the medical curriculum. Has it a place at all? Can its relevance be properly grasped unless the subject is integrated with the rest of the course? Is it perhaps best left for post-graduate study? It would be interesting to know how, in the light of their experience, the authors would answer these and other questions.

The book itself is curiously unbalanced; it is only necessary to compare the chapter on the X²-test with that in the Penguin "Facts from Figures" to see what an opportunity has been missed in the treatment of this most versatile of statistical techniques. On the other hand the more discursive chapters on the scientific method are most valuable and the authors deserve credit for bringing to light this apt parody of the inductive method, a "proof" that all odd numbers are prime:

"One's a prime, three's a prime, five's a prime, seven's a prime, nine's not—but that's experimental error—eleven's a prime, thirteen's a prime; why, the thing's proved!"

COMMENTARY ON AGE, by Kenneth Walker. Jonathan Cape, pp. 192. Price 12s. 6d.

Anyone interested in geriatrics or worried about growing old will enjoy this book. Mr. Walker is determinedly cheerful about the infirmities we usually associate with old age and dwells on the compensations rather than the troubles which come with the years. He paints an encouraging picture of what can be achieved if only one prepares early enough. He particularly enjoins the "quiet mind" as an important factor in growing old gracefully, but unfortunately he does not tell us how to acquire it.

He considers the important problems of work and living accommodation for the aged, outlining the ideal solution for both, and describes the philosophical and theological aspects of old age. Here he is on favourite territory, but in pointing out the advantages those who believe in a life to come have over unbelievers, he comes perilously near recommending religion for an aging body as one does digitalis for a failing heart—for its therapeutic value.

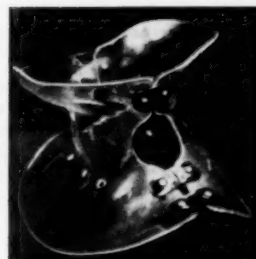
One is rather left with the feeling that to live an ideal old age one must begin to prepare in one's early teens—and never let up.

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THE LIFE AND WORK OF ASTLEY COOPER,

by R. C. Brock, Surgeon to Guy's Hospital.
E. & S. Livingstone, Ltd., 1952, pp. 176.
Price 20s.

Biographies are either long and somewhat tedious volumes intended to be used as works of reference, or shorter and more discriminating accounts which are meant to be read through with pleasure as well as profit. There is no doubt about the category to which Mr. Brock's biography of Astley Cooper belongs, and he deserves our congratulations as well as our gratitude for writing so well that we can see his hero as a man of science in spite of adulation which comes near to idolatry. It is probably quite true to say that Astley Cooper does not get his deserts from medical historians, and that very many of his contributions to medical science have been either forgotten or attributed to others.

Mr. Brock makes it clear that Astley Cooper was not merely an industrious and enthusiastic worker, but that before he undertook any new method of treating patients he made numerous painstaking dissections and the necessary preliminary experiments on animals. Operations previously regarded as the outcome of some sudden inspiration or flash of genius are thus seen in a very different and much clearer light; and we are given a conception of the preliminary trains of thought which enable us to recognise in Astley Cooper a distinguished disciple of John Hunter, and one of the earliest practitioners of the scientific surgery. One of the most interesting and important features of this biography is the stress laid upon Astley Cooper's admiration for Hunter, whose lectures he attended when he was an apprentice, and whose teaching and inspiration he was always ready to praise and to acknowledge when lecturing to his own students.

This book should be warmly recommended to all medical men, but specially to medical students who will find in it not only a stimulus to follow the example of a great man, but also the means of correcting many false impressions about Astley Cooper's contributions to surgery and to anatomy—for certain structures now associated with his name were not in fact those which he described as the most important. Certain it is that any student who accepts this suggestion will not be able to lay the book aside until he has read it through. That it should have been written when the stress of war-time surgery and administration were added to the author's routine duties, shows that the spirit of "the greatest of Guy's surgeons" still survives.

J. P. Ross.

HANDBOOK OF SURGERY, by R. C. Ledlie and M. Harmer. First edition, 1951. Baillière, Tindall & Cox, pp. 536, figs. 56. Price 21s.

In their preface the authors draw attention to the modern student's "need of a book which would enable him to maintain more easily a proper perspective of the vast field of surgery," and they have certainly gone far towards meeting this need with the production of this excellent textbook.

It is, as its name implies, both small and concise, but in 518 pages the whole field of surgery is covered systematically though, of necessity, with considerable brevity. It is well produced and tabulated and contains a number of diagrams. So helpful are these in explaining the subject matter to the beginner in surgery that one feels they could, with advantage, have been more numerous

even at the cost of a slight increase in length.

Every handbook of this type is open to criticism on the grounds of omission, and, bearing in mind that the majority of the readers will be embryo general practitioners, it seems unfortunate that common conditions such as varicose veins and retention of urine should be allocated less space than cerebral tumours and pancreatitis. Nevertheless, this is a book to be recommended to students, among whom it will certainly become popular. It is not intended for armchair reading; it should be read in the wards, the museum and the operating theatre, and those who use it in this way will surely find it an invaluable guide to their surgical studies.

A HISTORY OF MEDICINE in eight volumes (vol. I), by Henry E. Sigerist, 1951. Oxford University Press, New York, pp. 564 and figs. 104. Price 50s.

Hitherto historical research into medicine has been carried out almost entirely by the enthusiastic amateur, where history is his hobby and the writing of his work a labour of love. Dr. Henry E. Sigerist, highly qualified in historical research as well as medicine, is the first man to undertake what has been wanted for very many years—a complete detailed history of medicine, global in scope, from cave man to the present day. Perhaps the reason we have had to wait so long is that only in Dr. Sigerist has Nature combined together the necessary gifts and qualifications—scholar and traveller, the master of fourteen languages, and holder at one time of both the Karl Sudoff Chair at Leipzig and the Professorship of the Institute of History of Medicine at Johns Hopkins University. He has now retired to his villa on Lake Lugano at the early age of 56 so that he may devote his entire energies to completing the eight proposed volumes of the History.

This, the first volume, contains an important introduction on the Historical Approach to Medicine; it continues with a review of Primitive Medicine, and concludes with Egyptian and Mesopotamian Medicine. Only the best printing and lay-out is good enough to support Dr. Sigerist's writings, and the Oxford University Press (New York) have been at much pains to make it spacious and attractive. The type is restful and never monotonous. The illustrations have been collected together in one section, presumably to economise; they are also convenient. The three or four snapshots of African medicine men and some healing deities, apart from their interest, serve to show up the high quality of the other reproductions. The references are very adequate, but (and here a word in the publisher's ear) the introduction of a bold type or some symbol indicating whether we will find some interesting note or just the title and reference of some papyrus in Leipzig would save much needless turning to the end of the chapter. We shall look forward with keen interest and anticipation to the next volume.

AIDS TO ANATOMY, by R. J. Last, F.R.C.S., 11th Edition. Baillière, Tindall & Cox, pp. 380 + viii. Price 7s. 6d.

This is the eleventh edition of a little book which appeared in 1876 as "The Pocket Gray," a book of 64 pages. In its present form it is a summary of the standard texts; a summary however which does not fail to explain and in places even expand on classical descriptions. A stimulating work useful for consolidating and revising.



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CHEMOTHERAPY AND THE ANTIBIOTIC DRUGS, by various authors. Published by the Fellowship of Postgraduate Medicine, pp. 68, Figures 12. Price 5/-.

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BIOCHEMISTRY FOR MEDICAL STUDENTS, by W. V. Thorpe, J. and A. Churchill. 5th Edition, 1952, pp. 528. Price 22/6.

The fifth edition of this popular textbook has been brought up-to-date and the chapters on metabolism largely recast to include the Krebs tri-carboxylic acid cycle. It remains one of the standard works and does its job efficiently enough. But it is undoubtedly heavy going in parts and the student who wants to be really interested in biochemistry had better read Baldwin's "Dynamic Aspects" as well.

MIDWIFERY AND OBSTETRIC NURSING, by Michael Bulman, 3rd Edition, Published by Faber & Faber, pp. 369. Price 20s.

The make-up of Mr. Bulman's book is attractive, his material well presented and well illustrated and his style clear. Some of the descriptions, for in-

stance of pyelitis and puerperal fever, have a rather old-fashioned sound, and some notice of antibiotics newer than penicillin is desirable. The administration of acid with the sulphonamides, recommended on page 288, is unusual.

DOCTOR IN THE HOUSE, by Richard Gordon. Michael Joseph. Price 10s. 6d.

Medical students have long been regarded as the lowest form of undergraduate life. "Doctor in the House" will certainly confirm the popular belief that student life in a teaching hospital is a Bacchanalian orgy with brief pre-examination respites. However, the author has produced a very amusing and witty autobiography which for the modest sum of half a guinea will provide you with several hours of first-class amusement.

Rumour suggests that Richard Gordon is a Bart's man. St. Swithin's seems to bear a strong resemblance to the "Royal and Ancient"—"the nurses caps turned up at the back like the tails of white doves . . . the Christmas ward shows and children's party in outpatients," and "the indiscriminate droppings of the London pigeons in the court" are strongly suggestive of Bart's. Moreover, the style of the writer is similar to that of "Alan Tois," a frequent contributor to the Journal in the post-war period.

The dust cover of the book announces that Richard Gordon's next volume will be "Doctor at Sea." May it be as entertaining as "Doctor in the House."

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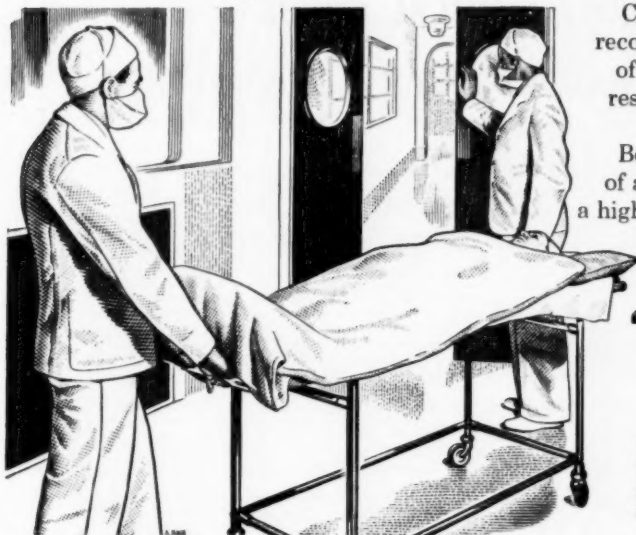
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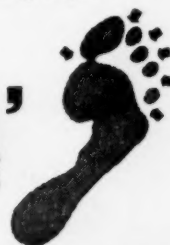


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